

What Is Claimed Is:

1 Claim 1. A computer comprising
2 a central processing unit;
3 a bus;
4 memory; and
5 a graphics accelerator including:
6 a texture value generating circuit for pixels describing a triangle,
7 and
8 a cache storing texels used in generating texture values.

1 Claim 2. A computer as claimed in Claim 1 in which the texels for
2 generating texture values for a complete polygon are prefetched to the
3 cache during triangle setup.

1 Claim 3. A computer as claimed in Claim 1 in which in which texels
2 for generating texture values for a pixel are fetched to the cache on
3 demand.

1 Claim 4. A computer as claimed in Claim 1 in which the cache
2 includes a controller providing a policy for replacing texels in the cache.

1 Claim 5. A computer as claimed in Claim 1 in which the policy for
2 replacement of texels depends on whether pixels sufficient to generate
3 texture values for a polygon fit into the cache.

1 Claim 6. A computer as claimed in Claim 1 in which the policy for
2 replacement of texels depends on whether texels have been used in
3 generating texture values for a last scan line of pixels.

1 Claim 7. A method for generating texture values for pixels defining a
2 polygon to be displayed by a computer output device comprising the
3 steps of:

4 determining pixels defining a polygon,

5 generating texture coordinates for each pixel defining a polygon,

- 6 caching texels to be used in generating texture values for each pixel
- 7 defining a polygon, and

8 generating texture values for each pixel defining a polygon using texels
9 which have been cached.

1 Claim 8. A method as claimed in Claim 7 further comprising retaining
2 texels which have been cached until no longer needed for polygons for
3 which pixels have been determined.

1 Claim 9. A method as claimed in Claim 7 further comprising replacing
2 texels which have been cached when no longer needed for polygons for
3 which pixels have been determined.

1 Claim 10. A method as claimed in Claim 7 in which the step of caching
2 texels to be used in generating texture values for each pixel defining a
3 polygon includes prefetching all texels required to generate texture
4 values for a polygon.

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1 Claim 11. A method as claimed in Claim 7 in which the step of caching
2 texels to be used in generating texture values for each pixel defining a
3 polygon includes fetching texels as needed to generate texture values for
4 pixels.

1 Claim 12. A graphics accelerator comprising:
2 a texture coordinate generating circuit,
3 a circuit responsive to pixel texture coordinates to select texels and
4 generate therefrom a texture value for any pixel the color of which is to
5 be modified by a texture, and
6 a texel cache for texels used by the circuit to generate a texture value for
7 any pixel.

1 Claim 13. A graphics accelerator as claimed in Claim 12 in which the
2 texel cache for texels used by the circuit to generate a texture value for
3 any pixel further comprises a control circuit for placing texels in the
4 cache.

1 Claim 14. A graphics accelerator as claimed in Claim 13 in which the
2 control circuit prefetches texels to the cache for a complete polygon.

1 Claim 15. A graphics accelerator as claimed in Claim 13 in which the
2 control circuit fetches texels to the cache as needed for pixels.

1 Claim 16. A graphics accelerator as claimed in Claim 13 in which the
2 control circuit provides a policy for replacing texels in the cache.

1 Claim 17. A graphics accelerator as claimed in Claim 16 in which the
2 policy for replacement of texels depends on whether texels sufficient to
3 generate texture values for a polygon fit into the cache.

1 Claim 18. A graphics accelerator as claimed in Claim 16 in which the
2 policy for replacement of texels depends on whether texels have been
3 used in generating texture values for a last scan line of pixels.

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